Protecting the Sound from the Adverse Effects of Toxic Substances

Toxic substances can cause adverse human and ecosystem health effects, and can result in significant negative economic impacts on the value of the natural resources of the Sound.

CCMP Strategy :

The CCMP strategy to address toxic contamination in LIS has five principal elements: 1) controlling and preventing toxic contamination from all sources; 2) addressing sediment contamination; 3) improving human health risk management; 4) monitoring and assessing toxic contaminants; and 5) conducting research to investigate toxic contamination.

Environmental Indicators/Results/Trends

Overall, toxic emissions in the region and to the Sound have been declining over the last 15 years due to more stringent environmental regulations. Historical contaminant levels as measured in sediments and living marine resources are also showing a downward trend, which is particularly evident for banned or controlled chemicals such as DDT and chlordane. Today, the major sources of toxic chemicals to the Sound are from STPs, industrial discharges, urban stormwater, and atmospheric deposition. Programs strive to reduce chemical discharges and minimize toxicity of effluents. However, the legacy of historical discharges of contaminants often remains in the sediments of Long Island Sound long after discharges cease.

2001 Highlights:

- EPA and ACOE continue work on the Environmental Impact Statement (EIS) for the designation of open water dredged material disposal sites in Long Island Sound. In 2001 a multitude of field studies were completed and reports were finalized. A Working Group of about 40 citizens met to review and comment on the findings of the field work. Due to funding restraints, additional work has not been approved. In the year 2002 it is anticipated that the site selection process will move forward, based on the completed field work.

- CTDEP completed development of a Long Island Sound Sediment Quality Information Database (SQUID) for the waterways and harbors of LIS in which dredging occurs. SQUID is a repository for sediment chemistry data and was compiled from dredging evaluation reports. SQUID enables users to determine where sediment sampling and analysis have occurred and how historic contaminant levels at proposed dredging sites have changed over time.

- In 2001, over 98% of the 84 Connecticut STPs discharging into the Sound or its tributaries passed toxicity testing. This is a 3% increase from 2000 in the number of facilities that discharge treated waste water that is safe for most aquatic life.

- The CT Department of Public Health maintained its general health advisory in 2001 for PCBs in striped bass caught in LIS. The NY State Department of Health maintained its general advisory for PCBs in striped bass, bluefish, blue crabs and American eel taken in LIS west of the Wading River.

- In 2001, EPA approved CTDEP's TMDLs for copper, lead, and zinc for the upper Willimantic River; copper for the Steele Brook, and copper, zinc, ammonia, and chlorine for Transylvania Brook.

SUMMARY OF MANAGEMENT ACTIONS
TOXIC SUBSTANCES

T-1. TOXIC CONTAMINANT SOURCE CONTROLS AND POLLUTION PREVENTION (CCMP TABLE 21, P. 65)

Key Elements: Permit programs and enforcement activity for both direct and indirect discharges, including toxicity testing of those discharges, are responsible for greatly reducing toxic substance loads over the past 25 years. LISS' priority management recommendation for toxic substances is to continue these successful activities, all of which are funded under current programs. Other programs that are designed to prevent pollution and reduce pollutant loads must also be supported as part of a comprehensive program to manage toxic contamination in the Sound.

Description	2002 Planned Action
CTDEP completed development of the Geographic Information System (GIS) project for the Sediment Quality Information Data (SQUID) system for Long Island Sound in 2001. A User Manual has been developed.	Distribution of the Long Island Sound SQUID. A Technical Manual is under development and almost completed.
CTDEP submitted to EPA a TMDL for copper for Steele Brook. EPA approved the Steele Brook TMDL on January 25, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
CTDEP submitted to EPA a TMDL for copper, zinc, ammonia, and chlorine for Transylvania Brook. EPA approved the Transylvania Brook TMDL on March 27, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
CTDEP submitted to EPA a TMDL for copper, lead, and zinc for the upper Willimantic River. EPA approved the upper Willimantic River TMDL on June 6, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
Over 98% of the CT STPs passed toxicity testing in 2001; this is a 4% increase from 2000 in the number of facilities that discharge treated water safe for most aquatic life.	As more STPs upgrade their facilities, the expected goal of 100% discharge passing the toxicity test will be achieved.

T-2. ADDRESSING SEDIMENT CONTAMINATION (CCMP TABLE 22, P. 67)

Key Elements: To begin the process of remediating sediments, LISS will conduct further assessments of toxic contaminant distribution in sediments of western Long Island Sound and embayments identified as having elevated toxic contaminant burdens. Based on these assessments, it will be possible to determine the feasibility, value, and cost of remediating contaminated sediments, where remediation may be necessary.

Description	2002 Planned Action
EPA and the ACOE continued work on the EIS for dredged material disposal site designation in LIS. Several work group meetings were held to present and discuss elements of the EIS. Assessments for sediments, living marine resources, physical oceanography and economics were completed in 2001.	The uncertainty of continued funding places current time lines for completion of the EIS in question.

T-3. IMPROVING HUMAN HEALTH RISK MANAGEMENT (CCMP TABLE 23, P. 68)

Key Elements: The objective of human health risk management is to determine the likelihood that exposure to a toxic substance will have adverse impacts on human health and to estimate the degree of the effects. In the case of Long Island Sound, the states of Connecticut and New York have issued advisories on consumption of selected seafood taken from the Sound. By improving communication of consumer advisories, it is anticipated that public health risk will be improved.

Description	2002 Planned Action
CTDEP continued to support UCONN researchers conducting research and monitoring for air deposition of mercury in LIS.	

T-4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

Key Elements: The LISS toxic contaminant monitoring program will focus on water, sediment and tissue media. The data collected from the monitoring program will be used to answer questions about resource and human health risks and sources of toxic contaminants.

Description	2002 Planned Action
CTDEP and NYSDEC through the Waste Management Institute of SUNY Stony Brook, continued participation in the EPA-sponsored National Coastal Assessment (Coastal 2000) monitoring program in 2001. Elements of the existing NYCDEP harbor water quality survey, the LIS ambient water quality monitoring program, Suffolk County DOHS and the Town of Hempstead water quality monitoring programs have been integrated with the National Coastal Assessment. The program is monitoring and assessing water and sediment quality parameters and biota in LIS.	Continued participation in 2002 is planned.
Under the EIS process for designation of dredged material disposal sites in LIS under MPRSA, in 2001 the ACOE and EPA conducted sampling and characterization of sediments at disposal sites in LIS. Sediments were analyzed for texture, chemistry and toxicity. Summaries of this and other EIS reports: 1) Combined Sediment and Grain Size, July 2001; 2) Identification of Upland Alternative Disposal Sites, July 2001; 3) Economic Significance of Navigation Dependant Industries, October 2001; 4) Dredging Needs Report, October 2001; 5) Sediment Quality Triad Report, November 2001; 6) Essential Fish Habitat Summaries, November 2001; 7) Analysis of CT DEP Trawl Data, November 2001; and 8) Physical Oceanographic Evaluation of Long Island Sound and Block Island Sound 2001 are available on the EPA New England Region website at http://www.epa.gov/region01/eco/lisdreg/rpfs.html.	

T-5. RESEARCH TO INVESTIGATE TOXIC CONTAMINATION (CCMP TABLE 25, P. 73)

Key Elements: Toxic contaminants identified in Long Island Sound are numerous; their pathways to the Sound are varied, and their effects on the environment, marine life and human health are not fully understood. These factors must be understood if effective management is to be accomplished. The CCMP identified these needs are identified as recommendations, though continuation of work begun by LISS through the EPA Long Island Sound Office and other parties should recognize these recommendations as priority research topics.

Description	2002 Planned Action
The Hudson River Foundation continued overseeing the development of the CARP (Contaminant Assessment Reduction Project) project, a model to assess in-place loadings and levels of toxics in New York Harbor. This project is funded through Port Authority of NY and NJ funds. Once competed in 2004, the model will enable managers to more accurately evaluate what toxic source controls are necessary in order to render newly deposited sediments cleaner. The model will be used to develop TMDLs for the Harbor, which could in turn, influence levels of toxics in LIS. The contractor for the CARP was selected and began work in November 2001.	

Under the LISS Research Grant Program, the Marine Science Research Center, SUNY Stony Brook research project of the effects of trace metals, organic carbon and inorganic nutrients in surface waters of LIS on phytoplankton growth began in 2001. (Dr. Wilhelmy, P.I.) The LISS-supported research project to investigate metal contaminant concentrations in LIS sediments over time (Dr. Varekamp, P.I.) also began in 2001. These two-year research projects are ongoing.	In 2002 the LISS will fund SUNY Stony Brook to conduct a research project to investigate new approaches for assessing mutagenic risk of contaminants in LIS (Dr. McElroy, P.I.)
The Summer 2000 edition of the *Journal of Coastal Research*, Vol. 16, No. 3 published 10 studies of regional processes, conditions, and characteristics of the LIS sea floor that were conducted since 1995 under the auspices of the USGS Center for Coastal and Marine Geology, Woods Hole, MA. The multidisciplinary project, in cooperation with CTDEP, was designed to understand the distribution of bottom contaminants and benthic habitats in LIS. In 2001, work continued on data analysis and synthesis.	